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## SPECIFICATION

TO ALL WHOM IT MAY CONCERN:

WE, John Lawrie, residence of Maple Grove, Minnesota, and Donald J. Trombley, residence of Elk River, Minnesot, both Citizens of the United States of America, have invented certain new and useful improvements in:

### **POUCH WITH PIERCABLE CHANNEL**

of which the following is a specification.

200201032443T

**TITLE: POUCH WITH PIERCABLE CHANNEL**

**BACKGROUND**

**Field**

5 The present invention is directed to a container in the form of a pouch. In particular, the present invention relates to a flexible pouch designed to be pierced by a straw.

**Description of Related Art**

10 Various types of flexible pouches, also known as flexible beverage containers or stand-up pouches, exist. The containers are convenient for juice and other beverages; in particular, these pouches are often marketed for children's beverages. In addition, larger pouches of this kind are useful for a variety of applications, including storing food, animal feed, liquids, chemicals, and other flowable products.

15 The above flexible pouch containers often have a basic rectangular shape. The rectangular shape of these containers and pouches normally include side seals on a first and second side, a top seal, and a gusseted bottom member. The stand-up varieties of these pouches are thin at the top and widen towards the base. When the stand-up pouches are filled and placed on a planar surface, the pouches remain in an upright position. Other pouches may not be designed to be stand up products, but have a similar design, whether with a wide base or a narrow base. In addition, the pouches may include a piercing opening for receiving a straw, or other tool, thus allowing for dispensation of the product contained therein.

20 Many of the pouches currently available are made from a laminate sheet of material that includes polyester, metal foil, and some sort of sealable plastic film, such as polyethylene. These containers are often heat sealable or sonic-weldable. The pouch material may be made of a foil material that utilizes heat sealing to affix a first panel and a second panel together, and also to affix a third panel (gusseted) to both the first and second panels.

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One problem with pouches that have a frangible piercing point is that the piercing point must be precisely struck with a piercing straw. Because of the necessity of striking the piercing point precisely, the frangible piercing point may not result in an easily piercable barrier, especially for small children.

5 Accordingly, there is need for an improved pouch and method for making a pouch that addresses one or more of the above problems.

### SUMMARY

10 The present invention includes a stand-up flexible pouch with a first panel, a second panel, and a third panel, the panels sealed together to form an interior compartment. The flexible pouch further comprises a frangible piercing point situated along an interior portion of a column. The column is operably designed to receive a straw which is then utilized to pierce the piercing point and remove contents from the compartment.

15 A flexible pouch comprising a compartment formed by a first panel sealed to a second panel, and a column disposed between the first panel and the second panel, the column being open at an external end and further including a seal at an internal point along the column.

A method of making a flexible pouch comprising sealing a first panel and a second panel together to form a compartment and forming a column extending into the compartment, an interior point of the column further comprising a frangible piercing point.

20 A flexible pouch for storing a juice product comprising a compartment defined by a panel, the panel formed of a multi-layer laminate, and a column extending through the panel and into the compartment, the column further comprising a frangible piercing point disposed in the column whereby the column is conFIG.d to receive a straw, the straw designed to pierce the piercing point for removal of the juice from the compartment.

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## BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 shows a partially sectional front elevational view of a flexible pouch consistent with the principles of the present invention.

FIG. 2 shows a front elevational view of the flexible pouch of FIG. 1 with a straw  
5 inserted through a channel.

FIG. 3 shows a side elevational view of a laminate used for making the pouch of FIG.  
1.

FIG. 4 shows a flow chart of the steps of making the pouch of FIG. 1.

FIG. 5 shows the pouch of FIG. 1 after the panels have been sealed together but  
10 before the pouch has been filled.

FIG. 6 shows an alternative embodiment of the pouch of the present invention.

FIG. 7 shows an alternative embodiment of the pouch of the present invention.

## DETAILED DESCRIPTION

With reference to FIGS. 1-7, a pouch 10 may be filled with liquids, such as juice or  
15 water, or may be filled with paste-like materials, fine granular materials, or any other suitable material that may be provided in a flexible container. In one embodiment, the material of the pouch 10 is made of one or more layers of a flexible laminate 17(as illustrated in FIG. 3) , such as an aluminum sheet covered with a plastic material. The layers of laminate 17 may be sealed together by heat sealing, heat welding, ultrasonic sealing or other methods known in  
20 the art, such as adhesives and crimping.

As illustrated in FIGS. 1 and 2, the flexible pouch 10 includes a first panel 12, a  
second panel 14, and a third panel 16. The first panel 12, forming the front of the pouch 10,  
is affixed to the second panel 14, which forms the rear of the pouch 10, by a seal 13 along a  
top edge, 18, a first side 20, and a second side 22. The first panel 12 and the second panel 14  
25 are further affixed to the third panel 16 so that the third panel 16 forms a gusseted bottom

between the first and second panels 12 and 14. When the panels 12, 14, 16 are affixed together, a pouch 10 is formed as illustrated in FIG. 1. The pouch 10 further includes a compartment 11 that contains the beverage or other product. As may be appreciated, the shape of the panels 12, 14, and 16 may vary depending on the shape of the panels 12, 14, and 16 are determined by the desired final shape of the pouch 10. In one embodiment, such a pouch 10 may be approximately 6 inches tall, 4.0 inches wide, and a few inches thick at the base, narrowing towards the top, though the selected size and dimensions can be varied as described.

As illustrated in FIG. 3, the laminate material 17 may include layers of polyester 28, adhesive 30, foil 32, adhesive 34, and polyethylene 36. Other materials may also be incorporated into the laminate 17. For example, the laminate material 17 of the present embodiment also includes an ink layer 38. The ink layer 38 may be positioned between the polyester 28 and adhesive 30. In one embodiment the multiple layer laminate 17 includes a 58 gauge reverse printed material, laminated to a foil (25 to 40 gauge), laminated to a 2.5 to 3.5 mil clear polyethylene sealant film. Other types of laminate materials 17 may be utilized as desired.

As further illustrated in FIG. 1, the flexible pouch 10 may include a straw 26 that may be utilized to pierce the pouch 10 and remove the contents of the pouch 10 from the compartment 11 after piercing. The straw 26 may be pointed and made of plastic or other material. The straw 26 is preferably wrapped in some protective coating. The straw 26 may be firmly attached to the pouch 10, but may also be easily separable for use. The straw 26 may be straight or bent, and may have a pointed end, a tapered end, or a substantially flat end.

As illustrated in FIGS. 1-2, the pouch 10 further includes a piercing point 24 and a column 40. The column 40 may be formed when the first panel 12 and the second panel 14 are sealed together. When the panels 12 and 14 are sealed together, sides 41a and 41b of the

column 40 are formed. The piercing point 24 may be situated at a point along the column 40. As may be appreciated, the piercing point 24 may be formed when the seal 13 is formed. As the sides 41a and 41b extend toward the compartment 11 of the pouch 10, the column 40 is formed in the desired length and shape. The seal 13 at the top of the column 40 includes a gap 44. The gap 44 is the open end of column 40. The piercing point 24 and the gap may be incorporated when sealing the first panel 12 and the second panel 14 together during the formation of the pouch 10. As may be appreciated, the column 40 can be formed leading into the compartment 11 at any desired angle and can be a variety of different lengths. In further embodiments the column 40 may be placed on a single panel.

In addition, the seal 13 of the present embodiment may include a first area 45 and a second area 46 of sealed material on either side of the column 40. The area 45 and area 46 may include a wider seal 13 between the first panel 12 and second panel 14, reinforcing the sides 41a and 41b of the column 40 and preventing the splitting of the pouch 10 when inserting the piercing straw 26 through the column 40. Sides 41a and 41b of the column 40 help to guide the piercing straw 26 to the piercing point 24 without snagging or damaging the interior of the column 40. Furthermore, as illustrated in FIG. 1, sides 41a and 41b of the column 40 may extend further beyond the piercing point 24 to guide the straw 26 into the compartment 11 even after piercing the piercing point 24.

The piercing point 24 separates the exterior of the pouch 10 from the interior compartment 11. In alternative embodiments the column 40 may be situated in other positions depending on the desires of the user. For example, the column 40 could be situated in the top of the pouch 10 and extend generally downwards toward the interior of the pouch 10. In still further embodiments, the first panel 12 and the second panel 14 may be folded in such a manner to form a portion of the channel 40. In such an embodiment the shape of one or

both of the panels 12 and 14 would include a portion that is folded inwards to form the channel 40.

The width of the column 40 may taper somewhat toward either end. A somewhat wider exterior end to the column 40 may make it easier to insert the straw. A wider interior end may allow the straw 26 to be moved around inside the compartment 11 and better collect the contents of the compartment 11. The overall width of the column 40 along its length can be varied, but, at a minimum, should comfortably accommodate the piercing straw 26 provided with the pouch 10.

When the straw 26 is utilized to pierce the piercing point 24, it does not actually pierce through one of the laminate 17 layers, but actually separates the sealed together panels 12 and 14. The insertion of the straw 26 through the column 40 separates the first panel 12 from the second panel 14 and exposes the piercing point 24 to the straw 26. In addition, the piercing point 14 may not be a straight line as illustrated in FIG. 1. The piercing point 24 may instead be in the form of a V, a U, , or some other shape that provides an easily pierced piercing point 24.

As illustrated in FIGS. 1 and 2, in one embodiment the first panel 12 further includes a cutout 42. The cutout 42 is a section of the first panel 12 that has been removed before the first panel 12 and the second panel 14 are sealed together. The cutout 42 is semi-circular in shape and is positioned at the exterior of the gap 44 in the seal 13. As illustrated in FIG. 1, the cutout 42 results in a portion of the laminate 17 of the second panel 14 being exposed at the exterior end of the column 40. The different shape of the panels 12 and 14 at the gap 44 of the seal 13 facilitates the insertion of the straw 26 into the column 40. The interior layer of the laminate material 17 exposed by the cutout 42 accentuates the gap 44 and facilitates the correct manner in which to insert the piercing straw 26 into the column 40. The color of the laminate 17 exposed by the cutout 42 may contrast with the graphics on the exterior side of

the laminate 17. Such a contrast aids in the placement of the straw 26 at the exterior end of the column 40 for correct insertion of the straw 26 into the pouch 10. In alternative embodiments, the color of the exposed laminate 17 can also be incorporated into the graphic scheme of the produced pouch.

5 As illustrated in FIG. 4, to make a pouch 10, a sheet of flexible laminate 17 material is first provided (50). The laminate 17 has several layers as described above, one of the layers being a metal foil layer 32. Any artwork that may be desired on the final pouch 10 product may be added to the laminate 17 prior to the start of the following steps. A series of cutouts 42 are first created in the laminate material (52). Creating the cutout 42 in the  
10 laminate 17 is accomplished by any manner known to those skilled in the art. The cutout 42 is circular, though in alternative embodiments the cutout 42 can be any desired size and shape. The cutouts 42 are made in a predetermined pattern that will result in the correct placement of the cutouts 42 on the panels 12, 14, 16 after they are cut and sealed together. After the cutouts 42 are created in the sheet of laminate material 17, the sheet is cut (54) into  
15 panels of a predetermined size and shape.

Next, the panels 12, 14, 16 are sealed (56) together to form the pouch 10. A first panel 12 and a second panel 14 are sealed along a first side and a second side and are each then sealed (56) to a third panel 16. The column 40 is created during sealing by the seal 13 employed to make the pouch 10. For example, if panels 12, 14, and 16 are heat sealed  
20 together, the heat seal may be shaped such that the seal 13 forms sides 41a and 41b of the column 40. The sides 41a and 41b may be of any desired length and provide a column 40 of a desired width. The seal 13 may also be utilized to form the piercing point 24 at any point within the length of the column 40.

After sealing the panels 12, 14, 16 together, the pouch 10 appears substantially as  
25 illustrated in FIG. 5. The top edge 18 is not yet sealed because the opening is required for



later filling of the pouch 10. As previously mentioned, sealing can be done by heat or sonic welding the chosen laminate materials 17 together. Because of the seal 13, the column 40 is formed when the side seal 22 is made.

Referring again to FIG. 4, after sealing (56), the pouch 10 is then filled (58). After filling, the top edge 18 of the pouch 10 is sealed (60) to enclose the contents in the compartment. Finally, the straw may be affixed (62) to the pouch 10.

As illustrated in FIG. 6, in one alternative embodiment of the present invention the top of the column 40 may be covered by a removable section 50, the section 50 attached to the pouch 10 and removable by utilization of a frangible tear line 51. When the frangible tear line 51 is ripped, the removable section 50 of the pouch 10 is torn away and the top of the column 40 (i.e., the gap 44 in the seal 13) is exposed for insertion of the straw 26 therethrough. Providing the removable section 50 may increase the protection afforded the contents of the pouch 10. This design may be utilized with a piercing point 24 attached at the end of the column 40 or without. The tear line 51 may be created in a number of ways known to those skilled in the art, for example, by incorporating a string or other fiber to act as a tear line, by incorporating a perforated line in the material of the laminate 17, and in other similar ways.

In another embodiment, the piercing point 24 can be pierced with a tool so that the material in the compartment 11 can be poured out of the pouch 10 through the column 40. Pouches 10 of this kind may be particularly useful when the pouches 10 contain materials such as pre-packaged liquids, animal feeds, chemicals, and the like.

As illustrated in FIG. 7, the column 40 may further include a second piercing point 52. The second piercing point 52 may be utilized as a second barrier between the exterior of the pouch 10 and the compartment 11. The second piercing point 52 may be formed in substantially the same manner as piercing point 24. This second piercing point 52 decreases

the risk that any particulates or contamination will make it into the compartment 11 and contaminate the material contained therein. Furthermore, because of the configuration of the column 40, piercing a second piercing point 52 to discharge the contents of the pouch 11 is not appreciably more difficult.

5           As may be appreciated, the column 40 may be positioned at any point on the pouch 10. The column 40 may extend inwardly from a side, such as the first side 18 or the second side 20, from the top edge 18, or may be positioned on the first panel 14 or the second panel 16. Each of these positions may be utilized, depending on the desires of the user, without changing the nature and scope of the present invention.

10           The pouch 10 has been described as a stand-up container that rests in a substantially upright position when set on a surface. In further embodiments, however, the pouch 10 may not be a stand-up pouch; the first panel 12 and the second panel 14 may be sealed together without the third panel 16 forming a gusseted section between the two. In this manner a pouch 10 may be formed that narrows towards the top and the bottom and is designed to lie  
15 flat on a surface.

          The column 40 and piercing point 24 positioned in the column 40 help to reduce the amount of spillage both when the pouch 10 is pierced and when the user removes the contents from the compartment 11. Any material that seeps out of the piercing point 24 past the straw 26 will simply stay within the column 40. The column 40 of the present invention  
20 acts as a reservoir for any material leaked from the compartment 11.

          The column 40 and piercing point 24 situated at the end of the column 40 minimizes the potential for accidental rupture the pouch 10 when piercing with the straw. The column 40 positions the straw 26 at the correct angle for piercing the piercing point 24. Furthermore, the column 40 positions the straw 26 in a position wherein the straw 26 is unlikely to pierce

through the first or second panel 12 and 14 in such a manner as to spill the contents of the pouch 10.

The embodiments described herein are for illustrative purposes and are not meant to exclude any derivations or alternative methods that are within the conceptual context of the invention. It is contemplated that various deviations can be made to these embodiments without deviating from the scope of the present invention. Accordingly, it is intended that the scope of the present invention be dictated by the appended claims rather than by the foregoing description of this embodiment.

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